

**Remarks/Arguments**

**Rejections Under 35 U.S.C. § 103(a)**

1. Claims 1-3, 5,6,10-13, 20-23, 24-26, 28 and 34 were rejected under 35 U.S.C. § 102(b) as being unpatentable by *Khalegi, et al.* (U.S. Patent 6,040,933) in view of *Chraplyvy, et al.* (U.S. Patent 5,225,922). For at least the reasons set forth below, Applicants respectfully submit that the present rejection is improper and should be withdrawn.

A proper rejection under 35 U.S.C. § 103(a) requires that **all** of the claimed elements be found in the applied art. If a **single** claimed element is not found in the applied art, a prima facie case of obviousness cannot be properly established.

Furthermore, obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is a teaching, suggestion or motivation to do so found in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Fine* 5 USPQ 2d 1596 (1988). However, hindsight is never an appropriate motivation for combining references and/or the requisite knowledge available to one having ordinary skill in the art. To this end, relying upon hindsight knowledge of applicants' disclosure when the prior art does not teach nor suggest such knowledge results in the use of the invention as a template for its own reconstruction. This is wholly improper in the determination of patentability. *Sensonics Inc. v Aerosonics Corp.*, 38 USPQ 2d 1551-1554 (1996), citing *W.L. Gore & Associates, Inc. v. Garlock, Inc.* 220 USPQ 303.

(Emphasis provided).

For the reasons set forth below, it is respectfully submitted that the Examiner has cobbled a rejection using Applicant's claims as a template for their reconstruction.

Claim 1 is drawn to an optimizer for a transmission system between a transmission terminal and a reception terminal having at least two channels. Claim 1 features: *a processor which determines an adjustment for equalizing an optical signal to noise ratio (OSNR) for each channel and reduces the adjustment by one half of the OSNR equalization...*

For example, in keeping with an embodiment described in the filed application, the performance of the system is optimized by the use of one-half of the OSNR equalization.

It is respectfully submitted that the reference to *Khalegi, et al.* lacks the disclosure of at least the noted features of claim 1. To this end, the reference to *Khalegi, et al.* to channel performance equalization in a wavelength division multiplexed system. The Office Action equates the network monitor with a processor. The reference discloses that the network monitor 18 has a calculating means for calculating OSNRs of the channel at the WDM 64 and the stored optical power measurements. The reference also discloses selection means for selecting a reference channel for the purpose of calculating the optical power adjustments of the transmitters.

Moreover, the reference discloses communicating adjustments to the transmitters until the calculated optical power adjustment amount is less than a minimum optical power adjustment of the transmitters 20, or some other predetermined amount. (Kindly refer to column 8,

lines 7-30 of the reference to *Khalegi, et al.* for support for the above assertions.)

Accordingly, it is respectfully submitted that the reference to *Khalegi, et al.* specifically lacks the disclosure of *a processor which determines an adjustment for equalizing an optical signal to noise ratio (OSNR) for each channel and reduces the adjustment by one half of the OSNR equalization.*

The Office Action acknowledges that the references to *Khalegi, et al.* and *Chraplyvy, et al.* both lack the disclosure that the processor reduces the adjustment by one-half of the OSNR calculation. However, the Office Action dismisses this feature as an obvious adjustment. Applicants respectfully disagree.

First, the Office Action asserts that the "combination (see col. 7, lines 49-67 to col. 8, lines 1-10 of *Khalegi, et al.*) clearly suggest that the optical channels is [sic] adjustable."

Notably, it is the adjustment of the OSNR equalization and not the 'optical channels' that is claimed. Furthermore, the portion of *Khalegi, et al.* relied upon in the quoted portion of the Office Action discloses equalizing performance of channels c1 to c4 by adjusting the power of the optical transmitters, Tx1, Tx2, Tx5 and Tx6 by an amount dependent upon the optical power measurements of signals s1, s2, s5 and s6 taken at the inputs of the amplifiers in the respective signal transmission paths. This portion of *Khalegi, et al.* also discloses means for calculating the OSNRs of the channels at the demultiplexer input and communicating adjustments to the transmitters until the calculated optical power adjustment amount is less than a minimum optical power

adjustment of the transmitters 20, or some other predetermined amount.

So, *Khalegi, et al.* discloses: 1.) **Equalizing performance of channels by adjusting the power of transmitters**; 2.) **Calculating the OSNR of the channels**; and 3.) **Communicating power adjustments until the calculated optical power adjustment amount is less than a minimum optical power adjustment of the transmitters 20, or some other predetermined amount.** In short, the reference performs adjustments in the optical power to the limit of adjustment of the transmitters 20 or a preset limit.

However, the feature of claim 1 at issue is a processor that *determines an adjustment for **equalizing an optical signal to noise ratio (OSNR) for each channel and reduces the adjustment by one half of the OSNR equalization.*** As such, the Office Action attempts to equate: equalizing performance (element 1. above) with equalizing an OSNR; and communicating power adjustments (element 2. above) with reducing the adjustment by one-half of the OSNR equalization.

First, the applied art does not disclose the OSNR equalization as claimed. Second, and as admitted by the Examiner, the reference lacks the reduction of the adjustment by one half of the OSNR equalization as claimed.

The Examiner asserts that the adjustment as claimed is merely an optimization that would be obvious to one of ordinary skill in the art. Applicants respectfully disagree. The embodiments of the filed application note the significant improvement of the operation of the 'worst channels' that limit overall system performance by the pre-emphasis of the one-half of the launched powers from the

OSNR pre-emphasis algorithm. This is shown in Fig. 2 as curve 56, which is the Q-curve of the optimization.

The Examiner asserts that the adjustment as claimed is merely the discovery of an optimum or workable range. However, the Examiner offers no extrinsic evidence that the adjustment range as claimed is even known, let alone obvious. Without such evidence, it is respectfully submitted that this assertion is merely the application of hindsight in view of Applicants' disclosure to realize the claimed invention. Applicants respectfully request the citation in the prior art of this claimed feature, or else withdrawal of the rejection. If the assertion is from the personal knowledge of the Examiner, an affidavit under 37 C.F.R. § 1.104(d) (2).

Therefore, because the applied art lacks at least the disclosure of at least one feature of each of independent claim 1, a *prima facie* case of obviousness has not been established. As such, and for at least the reasons set forth above, it is respectfully submitted that independent claim 1 is patentable over the applied art. Furthermore, at least because these independent claims are patentable, those claims that depend directly or indirectly from claim 1 are patentable.

Claim 20 is drawn to a method of optimizing performance of a transmission system between a transmission terminal and a reception terminal having at least two channels. Claim 20 includes features similar to those discussed above relative to claim 1. As such, for at least the reasons set forth above, it is respectfully submitted that independent claim 20 is patentable over the applied art. Furthermore, at least because these independent

claims are patentable, those claims that depend directly or indirectly from claim 20 are patentable.

2. Claims 4, 14-19, 23, 29 and 30-35 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Khalegi, et al.* in view of *Chraplyvy, et al.* and further in view of *Swanson, et al.* (U.S. Patent 6,433,904). For at least the reasons set forth below, it is respectfully submitted that this rejection is improper and should be withdrawn.

Claim 14 features "...**a processor determining an adjustment in accordance with fiber non-linearities** of the system..."

The filed application discloses that due to fiber non-linearities, merely equalizing the power or OSNR will not necessarily optimize performance. The feature of claim 14 noted above addresses the deleterious aspects of fiber non-linearities.

As noted previously, the reference to *Khalegi, et al.* does not disclose the claimed processor and therefore cannot disclose the processor that **determines an adjustment in accordance with fiber non-linearities**. The Office Action notes that the reference to *Khalegi, et al.* is deficient of this feature and then attempts to fashion a patchwork mosaic of elements garnered from individual references. The propriety of this rejection is respectfully traversed.

The Office Action relies on *Swanson, et al.* in an attempt to remedy the deficiencies of the other applied art. To this end, the Office Action asserts that reference to *Swanson, et al.* shows a well-known concept that the non-linearities of the system increase with increasing power. While this may be true, the noted feature of claim 14

relates to determining adjustments in accordance with fiber non-linearities. However, there is no disclosure in *Swanson, et al.* of the determination of adjustments based on the non-linearities in the system. Accordingly, assuming arguendo that applied references are properly combinable, their combination remains deficient of at least the **processor determining an adjustment in accordance with fiber non-linearities** of the system. Accordingly, it is respectfully submitted that the rejection is improper because at least one claimed element is not disclosed in the applied art.

Claim 29 is drawn to a method and includes features similar to those set forth in claim 14. For at least the reasons discussed above with regard to claim 14, it is respectfully submitted that claim 29 and the claims that depend therefrom are allowable over the applied art.

3. Claims 7-9 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Khalegi, et al.* in view of *Khoe, et al.* (U.S. Patent Number 4,942,568). For at least the reasons set forth below, it is respectfully submitted that this rejection is improper and should be withdrawn.

Claims 7-9 depend from independent claim 1. This independent claim, for reasons set forth above, is patentable over the applied art. Accordingly, and while in no way conceding to the propriety or reasoning of the present rejection, it is respectfully submitted that claims 7-9 are patentable over the applied art.

**CONCLUSION**

In view of the foregoing, reconsideration and withdrawal of all objections and rejections are respectfully requested. Allowance of all pending claims is earnestly solicited.

In the event that there are any outstanding matters remaining in the present application, please contact William S. Francos (Reg. No. 38,456) at (610) 375-3513 to discuss these matters.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment for any additional fees that may be required, or credit any overpayment, to Deposit Account No. 50-0238.

Respectfully submitted,

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